ORDER NO. SD83072595C2

Service Manual

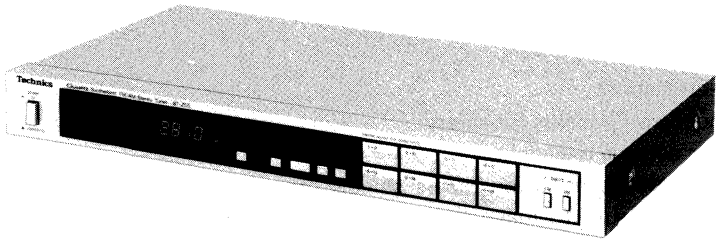
QUARTZ Synthesizer FM/AM Stereo Tuner

ST-Z55

[EGA]

ST-Z55(K)

[EGA]



* The colors of this model include silver and black.
* The black type model is provided with (K) in the Service Manual.

Area

* [EGA] is available in F.R. Germany.

TECHNISCHE DATEN

(Die technischen Daten Können infolge von Verbesserungen ohne An Kündigung geändert werden.)

(DIN 45 500)

■ UKW-TUNERTEIL

Wellenbereich	87,50 ~ 108,00 MHz
Eingangsempfindlichkeit	
S/R 30 dB	1,3 μV (75 Ω)
S/R 26 dB	1,2 μV (75 Ω)
S/R 20 dB	0,9 μV (75 Ω)
Nutzempfindlichkeit nach IHF	1,5 μV (nach IHF '58)
Stereoumschaltschwelle bei 46 dB nach IHF	28 μV/75 Ω
Gesamtklirrfaktor	
Mono	0,1%
Stereo	0,15%
Geräuschabstand	
Mono	70 dB (78 dB nach IHF)
Stereo	65 dB (70 dB nach IHF)
Frequenzgang	20 Hz ~ 15 kHz (+0,5 dB ~ −1,5 dB)
Trennschärfe bei Störsender	
normal ±400 kHz	65 dB
Einfangverhältnis	1,0 dB
Spiegelfrequenz-Dämpfung bei 98 MHz	75 dB
ZF-Dämpfung bei 98 MHz	100 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	100 dB
MW-Unterdrückung	55 dB
Übersprechdämpfung	
1 kHz	40 dB
Trägerrest	
19 kHz	−60 dB (−60 dB nach IHF)
38 kHz	−60 dB (−60 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)	±1,0 dB
Begrenzereinsatz	1,9 μV
Bandbreite	
ZF-Verstärker	180 kHz
UKW-Demodulator	1000 kHz
Antennenanschluß	75 Ω (unsymmetrisch)

■ MW-TUNERTEIL

Wellenbereiche	522 ~ 1611 kHz (9-kHz-Schritte) 530 ~ 1620 kHz (10-kHz-Schritte)
Eingangsempfindlichkeit (S/R 20 dB)	20 μV, 300 μV/m
Trennschärfe (±9 kHz)	55 dB
Spiegelfrequenz-Dämpfung bei 999 kHz	40 dB
ZF-Dämpfung bei 999 kHz	65 dB

■ ALLGEMEINE DATEN

Ausgangsspannung	1,0 V (IHF)
Leistungsaufnahme	8W
Netzspannung	Wechselstrom 50 Hz/60 Hz, 220V
Abmessungen (B×H×T)	430 × 53 × 245 mm
Gewicht	2,6 kg

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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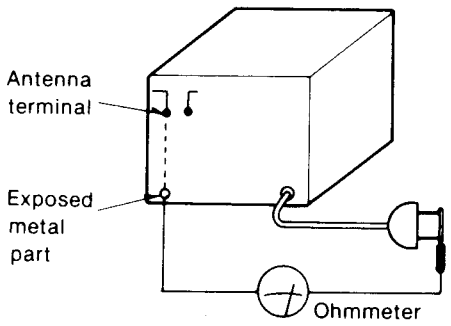
■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

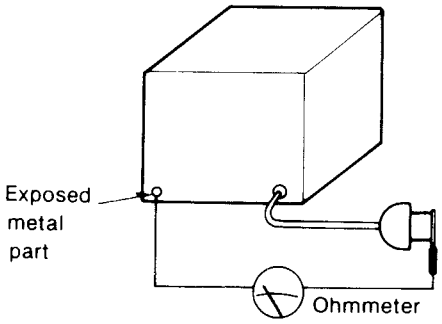
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3MΩ—5.2MΩ



(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

ORDER NO. SD83102658A4

Service Manual

QUARTZ Synthesizer FM/AM Stereo Tuner

ST-Z55/ST-Z55(K)

[PC]

* The colors of this model include silver and black.
* The black type model is provided with (K) in the Service Manual.

Area

[PC] is available in European Audio Club.

Please use this manual together with the service manual for Model No. ST-Z55/(K), Order No. SD83062515C9.

CHANGES

■ REPLACEMENT PARTS LIST

Notes: 1. Mentioned in this parts list are only those changed in Model No. ST-Z55/(K) for destination [EX] area.
2. Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these com-ponents, use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.

Ref. No.	Change of Part No.		Area	Part Name & Description	Pcs/Set	Remarks
	ST-Z55/(K) [EX]	ST-Z55/(K) [PC]				
RESISTORS						
R310, 311	ERD25FJ332	ERD25FJ272	[PC]	Carbon, 1/4W, 2.7kΩ, ±5%	2	Ⓢ
R312, 313	ERD25TJ333	ERD25TJ104	[PC]	Carbon, 1/4W, 100kΩ, ±5%	2	Ⓢ
CAPACITORS						
C309, 310	ECQM1H153KV	ECQM1H273KV	[PC]	Polyester, 50V, 0.027μF, ±10%	2	
TRANSFORMER						
T701	SLT5K141	SLT5K145	[PC]	Power Source	1	⚠
SWITCH						
S2	——	SSR179	[PC]	Voltage Selector	1	⚠
CABINET and CHASSIS PARTS						
21	SGP3110-1	SGP3130	[PC]	Rear Sub Panel	1	
24	SJA138-3	RJA52Y	[PC]	AC Cord	1	⚠
25	SGPTZ55-SE	SGPTZ55-SX	[PC]	Rear Panel	1	
ACCESSORIES						
A3	——	SJP5213-1	[PC]	Plug Adaptor	1	⚠
A9	SQF11761	SQF11763	[PC]	Instruction Book	1	
PACKING PART						
P3	SPS3495	SPS3495-4	[PC]	Pad, Rear Side	1	

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Printed in Japan
831000500 'd TN

■ HOW TO OPERATE

• Automatic memory presetting

Beginning at the frequency indicated by the digital display, the FM broadcasting stations and AM broadcasting stations will be automatically preset to "channels" 1 through 8 for FM and 9 through 16 for AM, respectively.
Note that in mountainous or remote areas, broadcasting stations which have weak broadcasting signals cannot be automatically preset into the memory.

1 Power: "on" (⏻→⏾)

2 Press the "FM" or "AM" button.

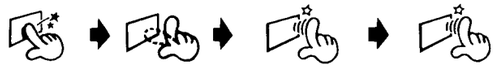
3
- **To preset FM broadcasting stations: Set to 87.50 MHz.**
- **To preset AM broadcasting stations: Set to 522 kHz (or 530 kHz).**

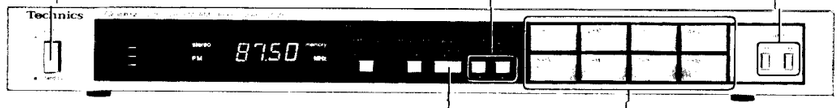
Tuning

① Press the button and hold slightly (frequency will change continuously).

② Release it at 87.50 MHz for FM or 522 kHz (or 530 kHz) for AM, and then press the button again momentarily (frequency change will stop).

③ Press the button momentarily (frequency will change each time the button is pressed), and tune to one of the above frequencies.





4 Press. When the frequency indication begins to change, release.

(The frequency will change upward, and the automatic presetting will begin with the broadcasting station of the lowest frequency and will continue in order.)

5 Confirm the names (call signs, etc.) of the broadcasting stations which are preset to each channel, and enter them on the file sheet.

To check the front channels (CH 1 8):

Press momentarily.	Channel number is displayed.	Frequency stored in the memory is displayed.
➡	CH. 1	➡ 88.10

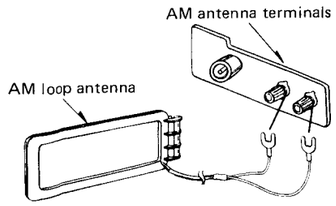
To check the back channels (CH 9 16):

Press slightly longer.	Release the button when the channel number is displayed.	Frequency stored in the memory is displayed.
➡	CH. 9	➡ 720

• How to use the AM loop antenna

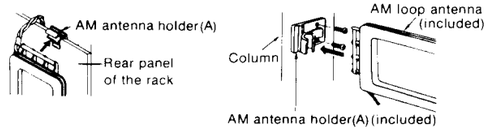
This unit includes a highly sensitive loop antenna for AM broadcast reception. If this antenna is not installed, AM broadcast will not be received. No outdoor antenna is necessary unless this unit is used in an area where signals are especially weak. (Connect the AM loop antenna even when an outdoor antenna is used.)

1. Connect the AM loop antenna to the AM antenna terminals located on the rear panel of the unit.

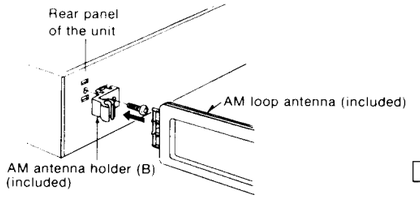


2. Find the height and direction of the antenna where reception is best and then fix it vertically to the wall, rack, etc.

1) When attaching the antenna to a wall, cloumn or rack.



2) When attaching the antenna to the unit.
This type of installation may cause impaired reception or result in signal noise. If possible, attach the antenna to the rack, a wall, or a column.



• Manual memory presetting

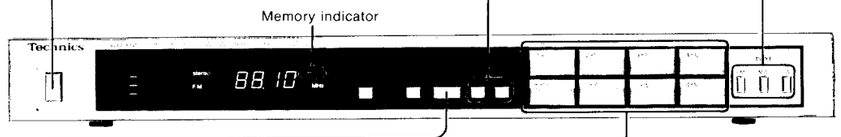
Stations can be freely preset to any desired channel.

1 Power: "on" (⏻→⏾)

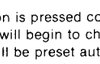
2 Press the "FM", "MW" or "LW" button.

3 Press the appropriate tuning button to tune to the desired broadcast.

- **Auto tuning**
  Press the button. When the frequency indication begins to change, release the button (a broadcasting station will be selected automatically). Repeat this operation until the desired station is found.
- **Manual tuning**
  Press the button momentarily and tune to the desired station (the frequency will change each time the button is pressed).



4 Press momentarily, and then release.
(The memory indicator will illuminate for approximately 4 seconds.)



Note:
If the button is pressed continuously, the frequency will begin to change, and the memory will be preset automatically.
To stop the automatic memory presetting, once again press either the "▶" button or the "◀" button.

5 While the memory indicator is illuminated, press the button of the desired channel.

- **To preset channels 1 through 8:**

Press the button momentarily, and then release.

- **To preset channels 9 through 16:**

Press the button slightly longer, and then release.

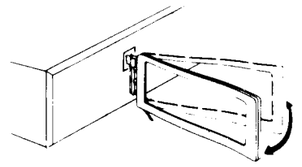
When the button is pressed, the memory indicator illumination will stop, and the presetting is complete.

Note:
1. If the memory indication illumination stops before you press the button, once again repeat step (4) and then step (5).
2. If a new broadcasting station is preset into a channel, the broadcasting station which was previously entered in that channel will be automatically erased.

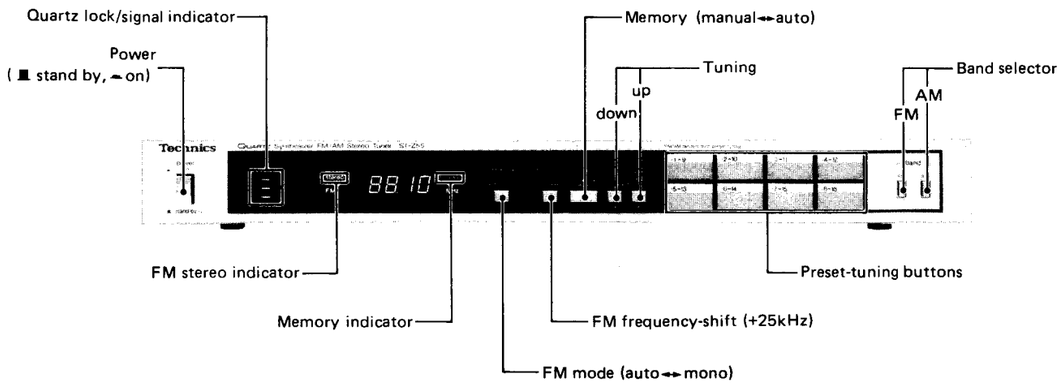
6 Enter the name (call sign, etc.) of the preset broadcasting station on the station memory file sheet.
This completes the procedures for presetting radio broadcast frequencies. The other preset-tuning buttons can be preset in the same way by following steps (2) through (5).

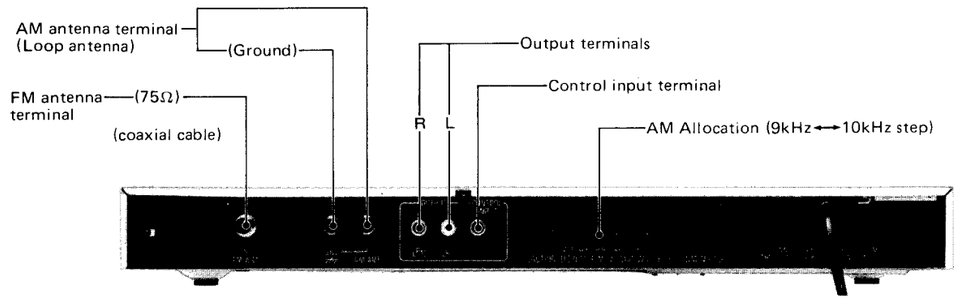
Pay attention to the following points when attaching the antenna.
1) Do not attach it horizontally (to do so would impair reception).
2) Do not attach it close to metal surfaces (to do so would result in noise).
3) Do not attach it close to power cords, speaker wires, etc. (to do so would result in noise).
4) Do not attach it close to a tape deck (when the tape deck is being used, chirping or beeping sounds may be received).

3. Move the antenna toward the right or left to find the point of best reception.



■ LOCATION OF CONTROLS





■ DISASSEMBLY INSTRUCTIONS

When repairing the FM front-end pack, replace it with the adjusted pack for repair.

• How to remove the printed circuit board

1. Remove the 4 setscrews (❶ ~ ❹ in Fig. 1) of the cabinet.
2. Move the cabinet in the direction of the arrow Ⓐ in Fig. 1.
3. Remove the 5 setscrews (❺~ ❼ in Fig. 1 and ❽, ❾ in Fig. 2) of the front panel and the 8 setscrews (❿ ~ ⓮ in Fig. 2 and ⓯~⓲ in Fig. 3) of the printed circuit board or rear panel.
4. Pressing the 2 claws on the right and left sides of front panel in the direction of arrow Ⓑ (Fig. 4), remove the front panel along with the P.C.B. in the direction of arrow Ⓒ (Fig. 4).
   (Raise the printed circuit board when repairing.)

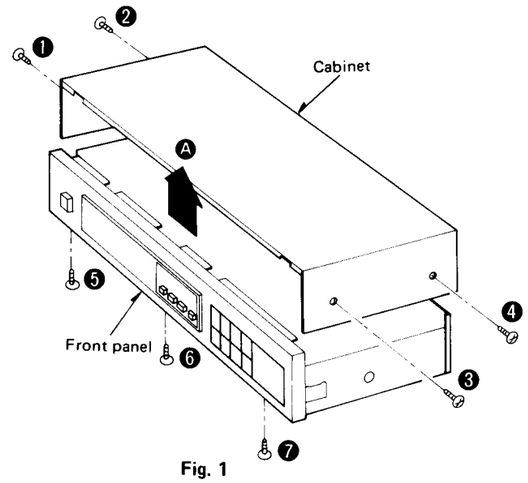


Fig. 1

• How to remove the front sub-panel

1. Remove the printed circuit board.
   (Refer to **"How to remove the printed circuit board".)**
2. Remove the set screw (⓲ in Fig. 4) which fastens the bracket of FL. Next, remove the bracket by pushing it in the direction of arrow Ⓓ with a screwdriver.
3. The claws projected (at 9 portions) from the front sub-panel are engaged with the front panel.
   Disengage the claws from by screwdriver or the like to remove the front sub-panel. (See Fig. 5)

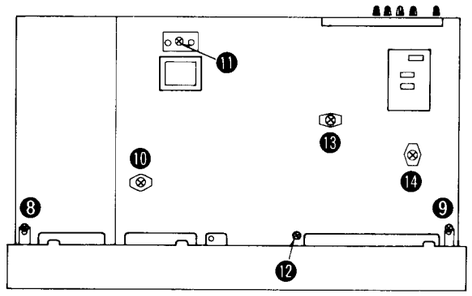


Fig. 2

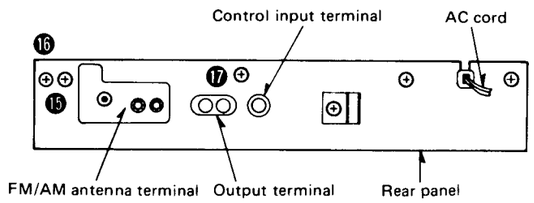


Fig. 3

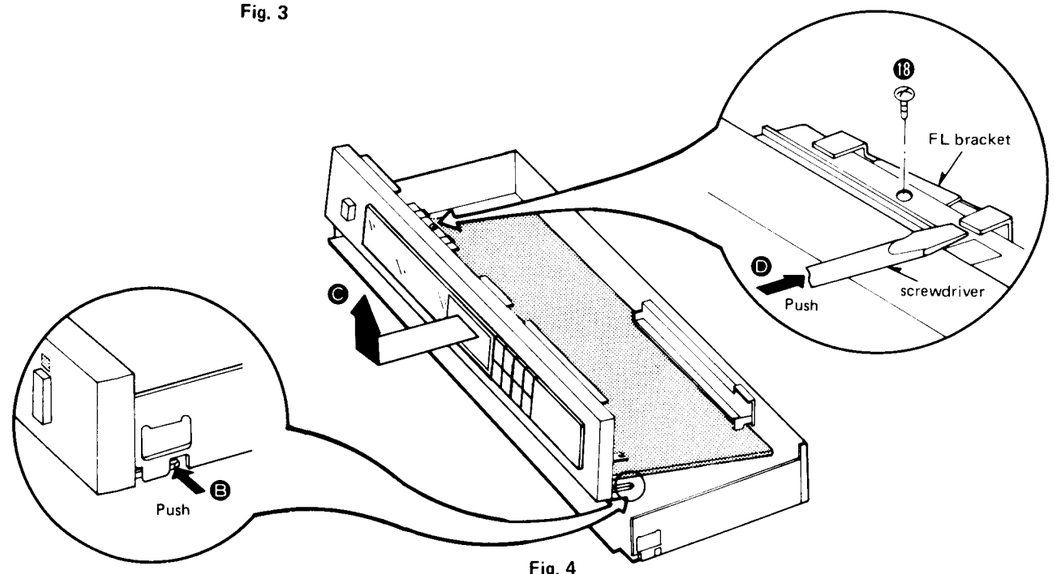


Fig. 4

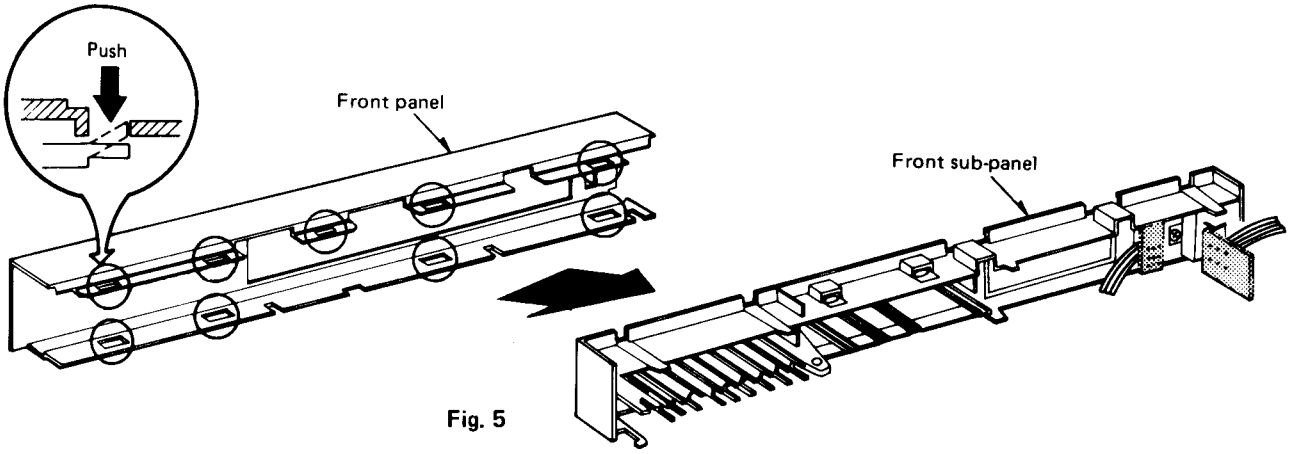


Fig. 5

■ MESSUNGEN UND JUSTIERUNGEN

Anmerkung: Die AM-OSC-Spule (L203) und AM ZFT (T201) sind bereits justiert und benötigt daher keine Justierung.

AM (MW)-EINSTELLUNG

* **Stellungen und zu benutzende Geräte**
1. Elektronisches Voltmeter für Wechselstrom (VTVM).
2. AM (MW)-Meßsender (AM-SG).
3. Bereichsschalter. . . . . .AM
4. AM (MW) Wellenverteilungs-Wahlschalter auf Position "9 kHz" stellen.
5. Netzspannung auf ihrem Sollwert halten.
6. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
7. Einen nichtmetallischen Schraubenzieher für die Einstellungen verwenden.

Nr.	AM (MW)-MESSENDER ANSCHLUSS	AM (MW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHS-PUNKTE	ABGLEICHSVERFAHREN
	AM (MW)-HF-ABGLEICH					
1	AM-MO über 200 pF Kondensator an den AM-Antennenanschluß anschließen, wie in Abb. 6 gezeigt. (Schwacher Eingang.)	612 kHz (400 Hz Modulat., 30%)	612 kHz	Wechselstrom-Voltmeter oder Oszillograph über den Ausgang "OUTPUT" anschließen.	L202 (Ant. Spule)	1. Auf max. Ausgang abgleichen. 2. Den Ferritkern von L202 mit einem Schraubendreher justieren.
2		1503 kHz (400 Hz Modulat., 30%)	1503 kHz		CT201 (Ant. Trimmer)	1. Auf max. Ausgang abgleichen. 2. Die Schritte (1) und (2) wiederholen, bis die Frequenz genau mit der Skalenanzeige übereinstimmt.

FM (UKW)-EINSTELLUNG

* **Stellungen und zu benutzenden Geräte**
1. UKW-Meßsender (FM-SG)
2. Klirrfaktor-Meßbrücke.
3. Oszillograph.
4. Elektronische Voltmeter für Wechsel-und Gleichstrom (VTVM).
5. Signalfrequenzmesser (meßbar für 19 kHz und 108 MHz)
6. Bereichsschalter. . . . . FM
7. Den UKW-Betriebsartenschalter auf die "mono"-Position stellen.
8. Die anderen Einstellungen sind gleich wie beider MW-Justierung.

* **Vorbereitung des UKW-Meßoszillators (UKW-MO)**
Die Normal-Eingangsleistung dieses Gerätes beträgt 60 dB (1 mV), 400 Hz, 100% Modulation. (Wegen der Dämpfung bei Verwendung von Koaxialkabeln, muß die MO-Ausgangsleistung 6 dB oder mehr betragen: d.h. wenn die Eingangsleistung 60 dB beträgt, muß der MO-Ausgang 66 dB betragen.

Nr.	FM (UKW)-MESSENDER ANSCHLUSS	FM (UKW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHS-PUNKTE	ABGLEICHSVERFAHREN
	UKW-HF-ABGLEICH					
3	UKW-MO an FM Antennende anschließen. (Schwacher)	100.10 MHz (400 Hz Modulat., 100%)	100.10 MHz	Wechselstrom-Voltmeter oder Oszillograph über den Ausgang "OUTPUT" anschließen.	T1 (Ant. Spule)	Die Eingangsfrequenz und die Einstellungspunkte so justieren, daß der Ausgang den maximalen Wert erreicht.
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO					
4	UKW-MO an FM Antennende anschließen, wie in Abb. 7 gezeigt. (60 dB in den Antenneneingang anlegen.)	100,10 MHz (400 Hz Modulat. 100%)	100,10 MHz	Ein Gleichstrom-Voltmeter zwishen **TP101** (–) und **TP102** (+) über eine Drossel-spule anschließen.	T101 (Diskriminator FT)	Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Zustand 0 mV im 300 mV Bereich beträgt.
5				Klirrfaktor-Meßbrücke an Ausgangsklemme "OUTPUT" anschließen.	T102 (Diskriminator FT)	Kern von T102 für minimale Verzerrung der rechten und linken Kanäle justieren.

UKW-STEREO-DEKODER-ABGLEICH

UNTER VERWENDUNG EINES ZÄHLERS	ALTERNATIV-MESSMETHODE
1. Unmoduliertes Mono-Signal 100.10 MHz in das Gerät speisen. 2. FM mode-Schalter auf "FM auto" stellen. 3. Zähler über einen Widerstand von 100k Ohm an **TP301** anschließen. (Vgl. Abb. 8) 4. **VR301** auf 19 kHz ± 30 Hz einstellen.	1. Stereosignal entweder von einem Stereogenerator, oder einem Sender einspeisen. 2. **VR301** so einstellen, bis die Stereolampe aufleuchtet. Schleifer von **VR301** sichern, wie in Abb. 9 gezeigt.

Nr.						
	TRENNUNGS-JUSTIERUNG					
7	UKW-MO an FM Antennende Anschließen. (60 dB in den Antenneneingang anlegen) (Pilot 10% Mod. Stereo-Signal)	100,10 MHz (1 kHz Modulat., 100%) (L-oder (R-Betrieb)	100,10 MHz	Wechselstrom-Voltmeter durch Tiefpassfilter and die "OUTPUT"-Anschlüsse des Gerätes anschließen. (fc = 15kHz – 19kHz)	VR302 (Trennungs)	1. VR302 so justieren daß der R-Ausgang minimal wird, wenn der Stereo-Modulator im L-Zustand (L-Kanal Modulation) ist.

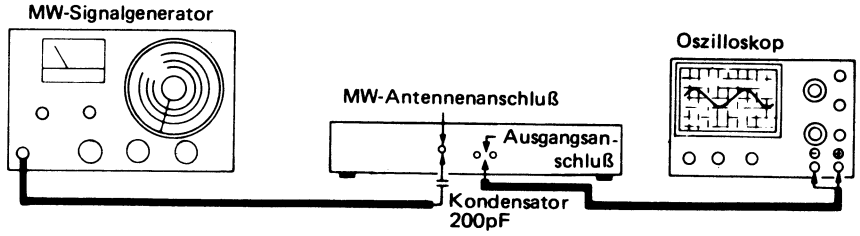


Abb. 6 (MW-Justierung)

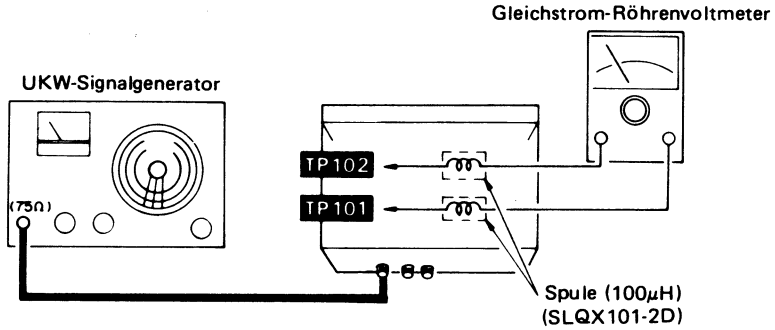
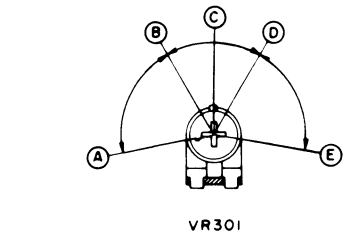


Abb. 7 (Justierung der UKW-Offset)



Ⓐ–Ⓑ, Ⓓ–Ⓔ : Stereo AUS-Position
Ⓑ–Ⓓ : Stereo EIN-Position (Anzeige leuchtet)
Ⓒ : Punkt der Pilot-Schaltung justieren.

Abb. 9 (Justierung derUKW-MPX-VCO)

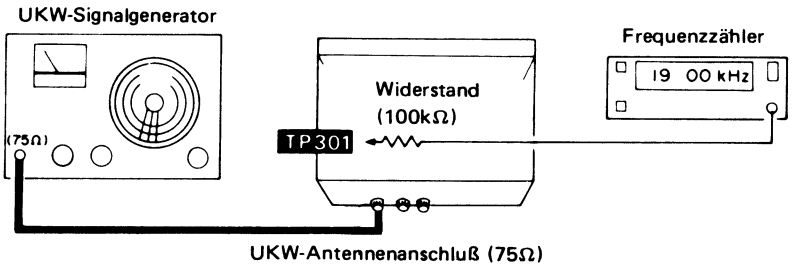
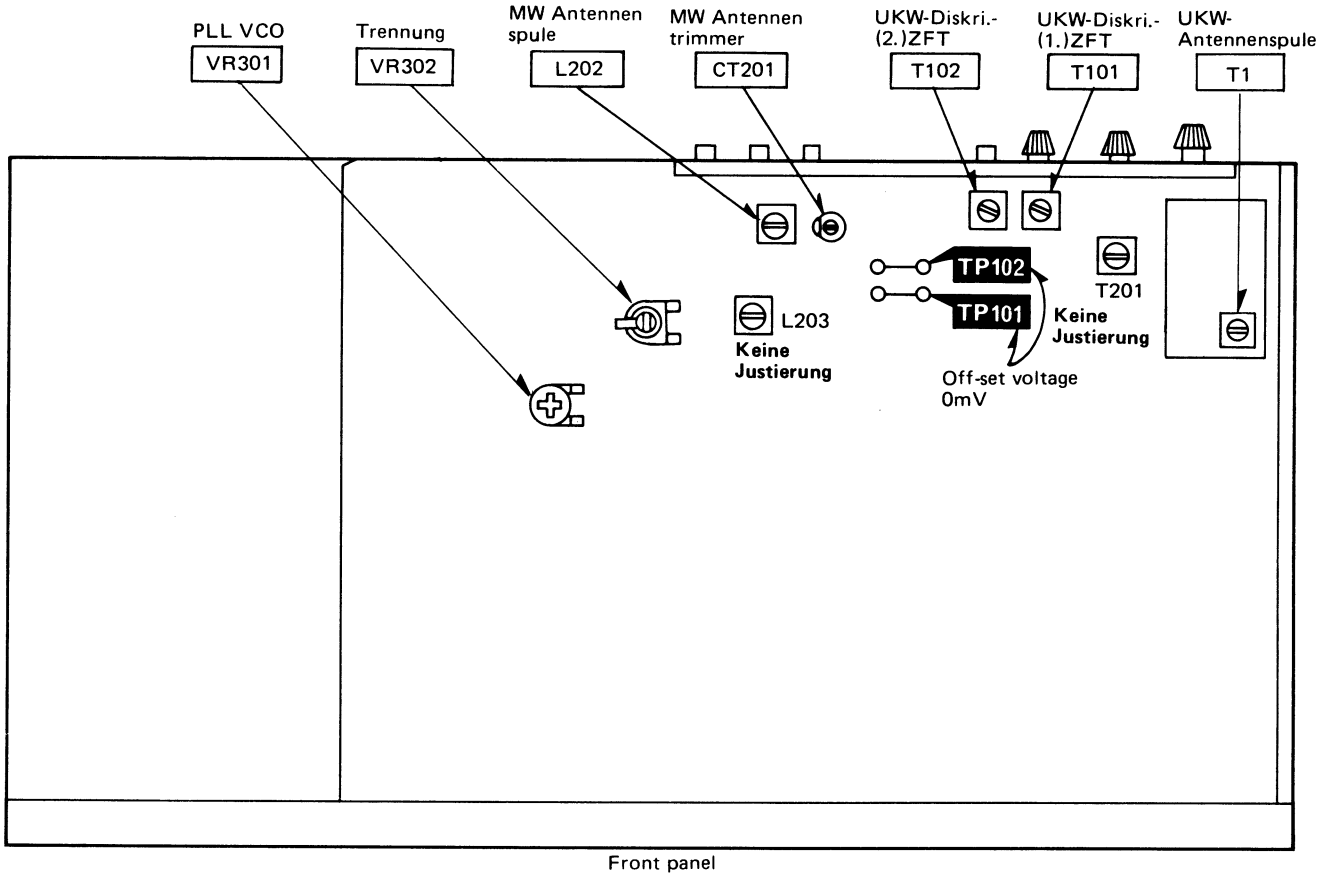


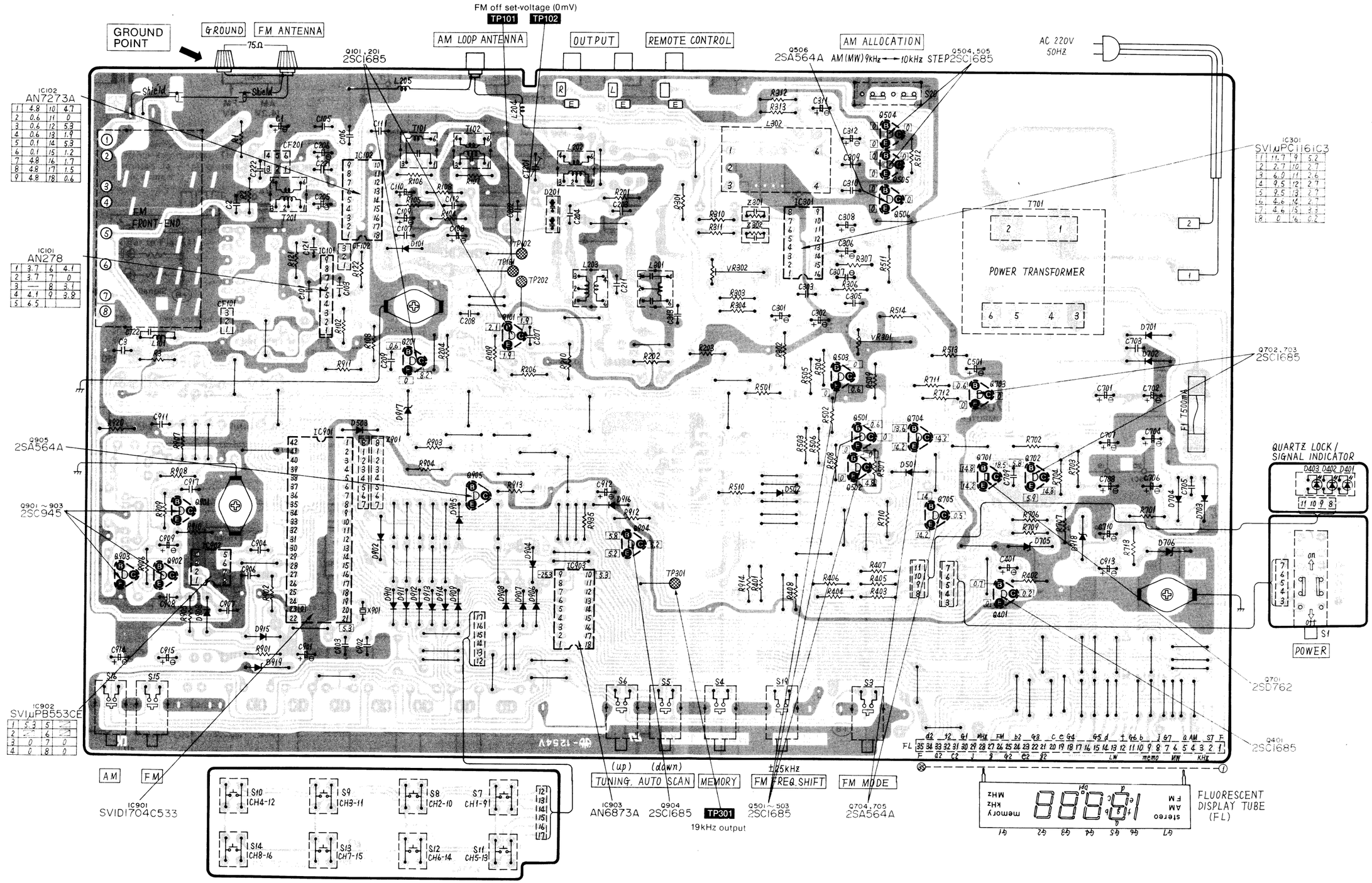
Abb. 8 (Justierung derUKW-MPX-VCO)



ST-Z55

■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

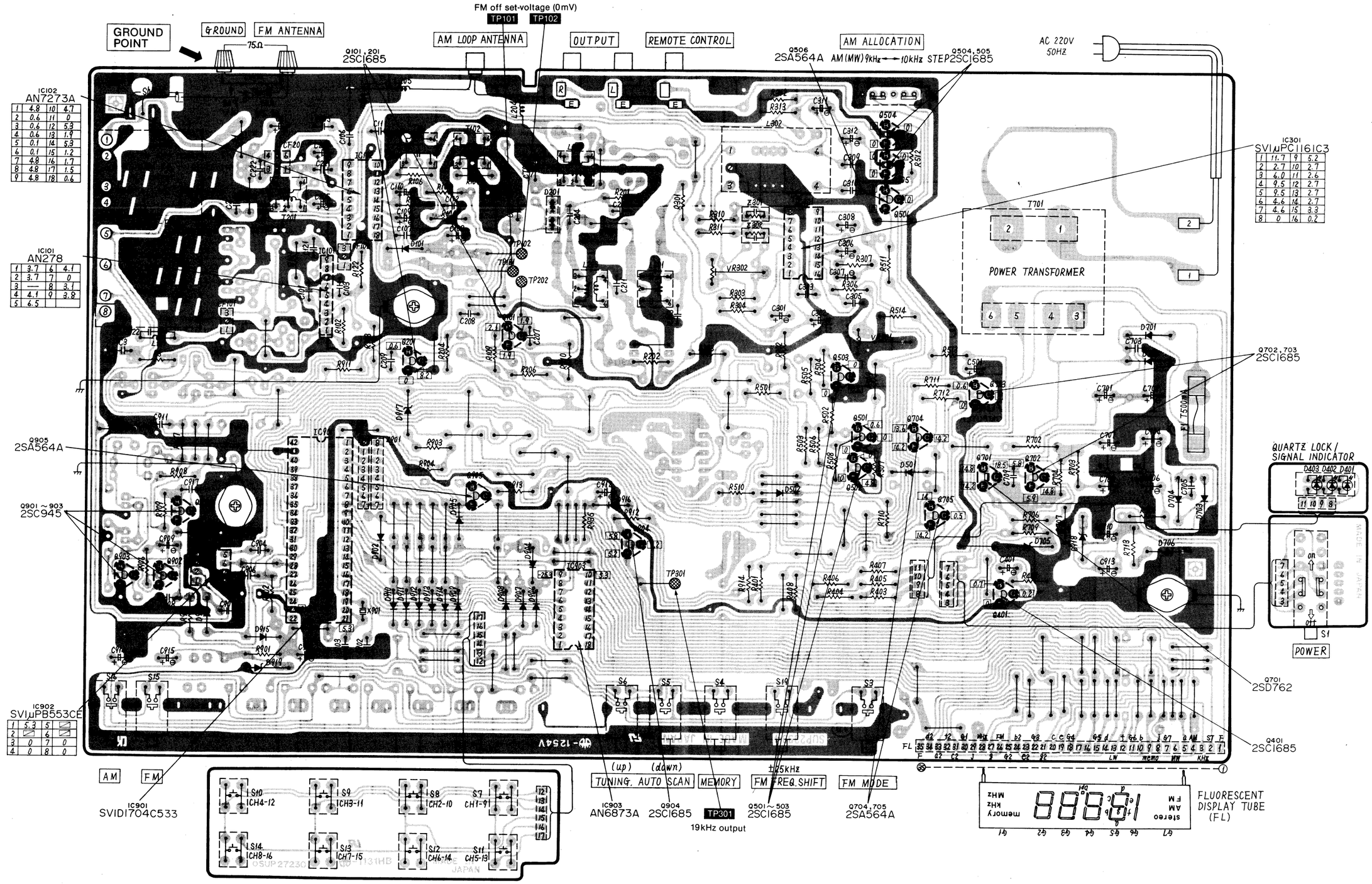
Ground (Earth) lines



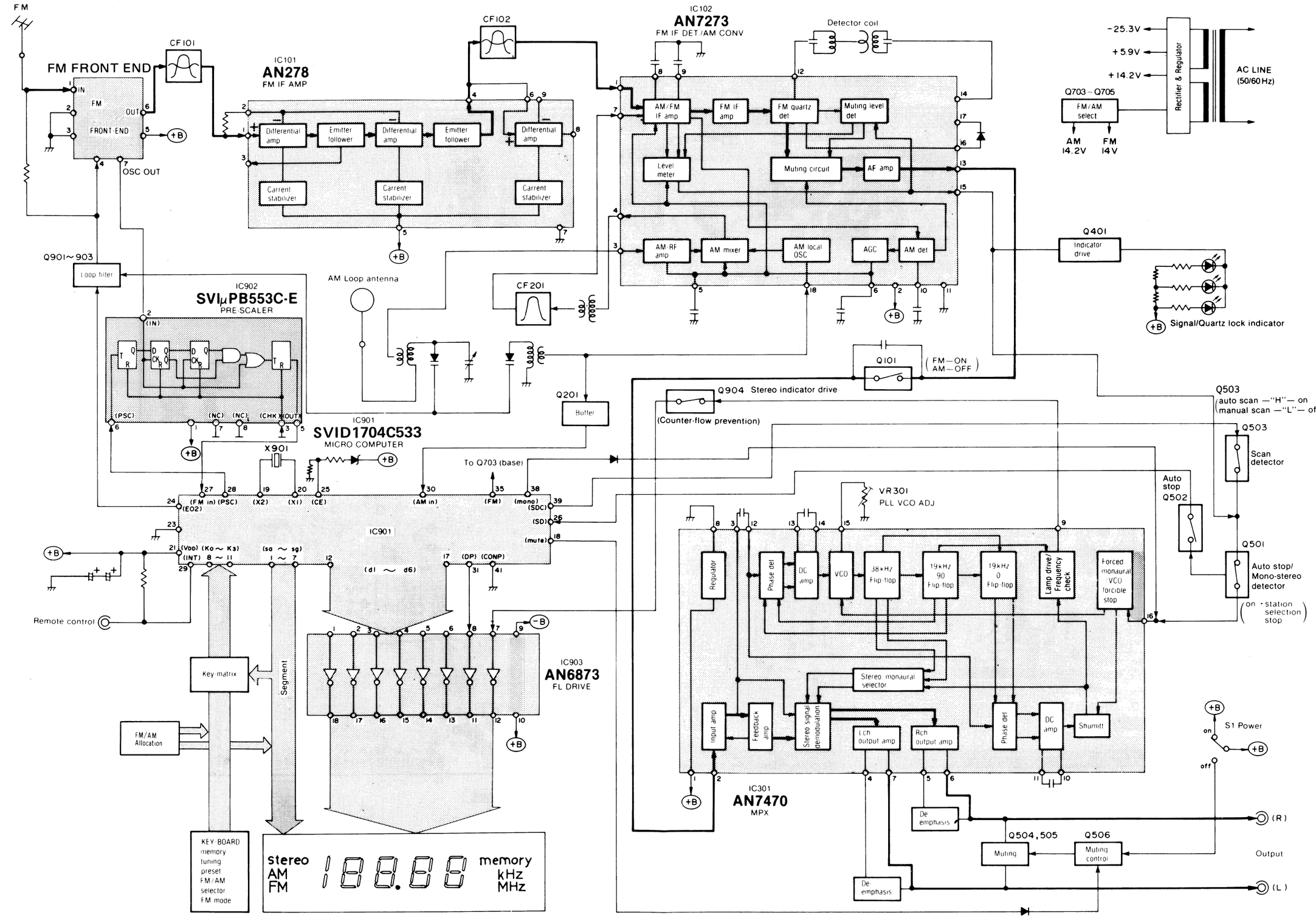
ST-Z55

■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

Ground (Earth) lines

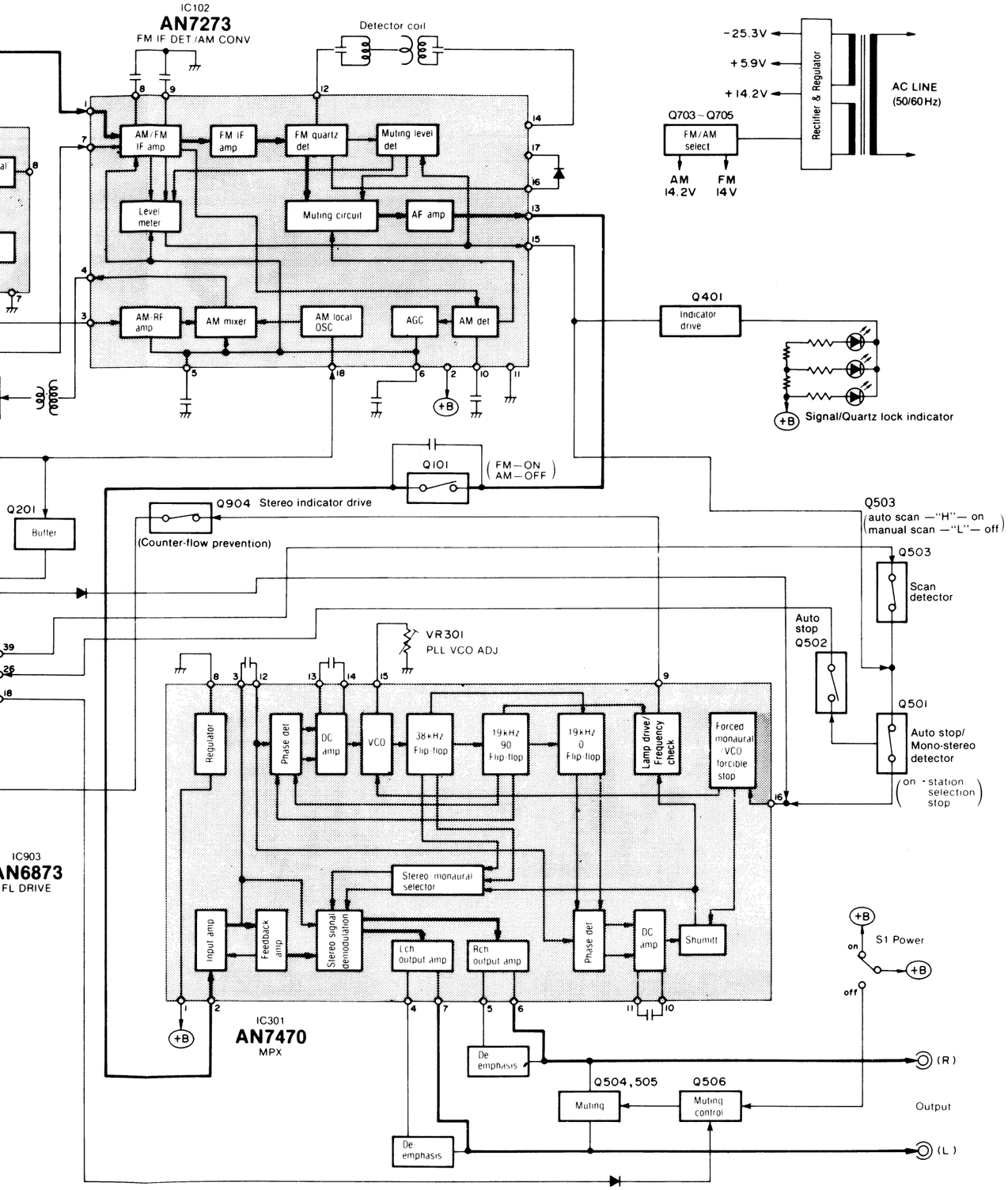


■ BLOCK DIAGRAM



■ FUNCTIO

Pin No.	Mark
1	Sa
2	Sb
3	Sc
4	Sd
5	Se
6	Sf
7	Sg
8	K0
9	K1
10	K2
11	K3
12	D6
13	D5
14	D4
15	D3
16	D2
17	D1
18	MT
19	X2
20	X1
21	VDD
22	E01
23	GND
24	E02
25	CE
26	SD
27	FM



■ FUNCTION OF TERMINAL (PLL CONTROLLER IC901)

Pin No.	Mark	Description of terminal
1	Sa	Segment signal output terminal for display. (Refer to Fig. 11)
2	Sb	
3	Sc	
4	Sd	
5	Se	
6	Sf	
7	Sg	
8	K0	Input terminal for key return signal from external key matrix. The output of segment terminals (a ~ g) is used as the key return signal source. 4V / 0V
9	K1	
10	K2	
11	K3	
12	D6	Digit signal output terminal for display. (Refer to Fig. 11)
13	D5	
14	D4	
15	D3	
16	D2	
17	D1	
18	MT	This is the output terminal to eliminate shock noise due to unlocking at PLL. When the CE terminal is at low level, the output from this terminal is at high level. Power "ON" Power "OFF" 700μs 4V 0V Muting "ON" Muting "OFF"
19	X2	Connecting terminal for crystal oscillator. The crystal connected is at 4.5 MHz.
20	X1	
21	VDD	Power supply terminal of the device.
22	E01	Not used in this unit.
23	GND	Ground terminal.
24	E02	When the divided oscillation frequency is higher than the standard frequency, H-level output is delivered from these terminals. When it is lower, L-level (0V) output is delivered. When they coincide, it results in floating.
25	CE	This is the selected signal input terminal of the device. When operating the device, make the level high, and when it is not used, make the level low. When this terminal is at low level, all the segment (a ~ g) and digits (D1 ~ D6) terminals are off, but the memory is held. Power "ON" Power "OFF" 4V 0V The device does not operate during this period.
26	SD	This input terminal detects the reception of a broadcasting station. The voltage is 4.2V during reception, and otherwise 0V.
27	FM	Input terminal for FM OSC output frequency-divided to 1/16 or 1/17 by pre-scaler.

Pin No.	Mark	Descripiton of terminal
28	PSC	This is the terminal to deliver the frequency dividing ratio changeover output signal to the pre-scaler. The terminal continues to produce pulses at the rise of the signal applied to FM terminal (27) until the content of the inside swallow counter is 0. When the swallow counter comes to 0, the terminal level becomes low, then the frequency dividing ratio of pre-scaler is 1/16. Pulse two times larger than the value that cannot be divided by VCO/16. 1/17 1/16 5V 0V 25kHz
29	INT	This is the interrupt demand signal input terminal. The signal from the control input terminal is put into this terminal, demanding for interruption, then the flow of program will be unconditionally shifted to the address No. 1.
30	AM	Input terminal for AM OSC output. 2.8V 1.7V 1 MHz ~ 2 MHz
31	Dp	2-bit input/output. Dp (31) is decimal point indication output terminal for digital indication. Lamp (32) is not used in this unit.
32	Lamp	
33	IF	4-Bit output port. FM (35) is FM/AM output terminal; 5V in FM and 0V in AM. IF (33), LW (34) and AM (36) not used in this unit.
34	LW	
35	FM	
36	AM	
37	OFF	This is 4-bit input/output port. MONO terminal (38) is the auto/mono changeover output terminal, which is 5V in auto, and 0V in mono. SDC terminal (39) is the auto scan/manual scan changeover output terminal, which is 5V in auto scan, and 0V in manual scan.
38	MONO	
39	SDC	
40	D	
41	COMP	One-bit input/output port. (Not used in this unit.)
42	VDP	One-bit output port. (Not used in this unit.)

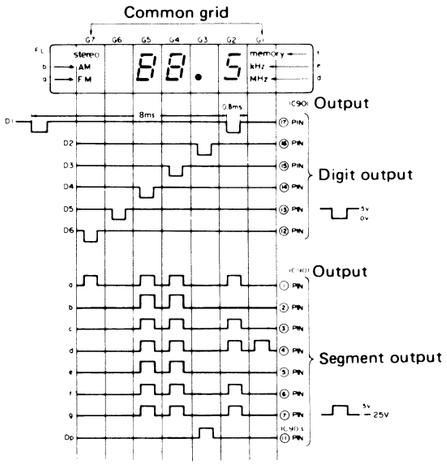
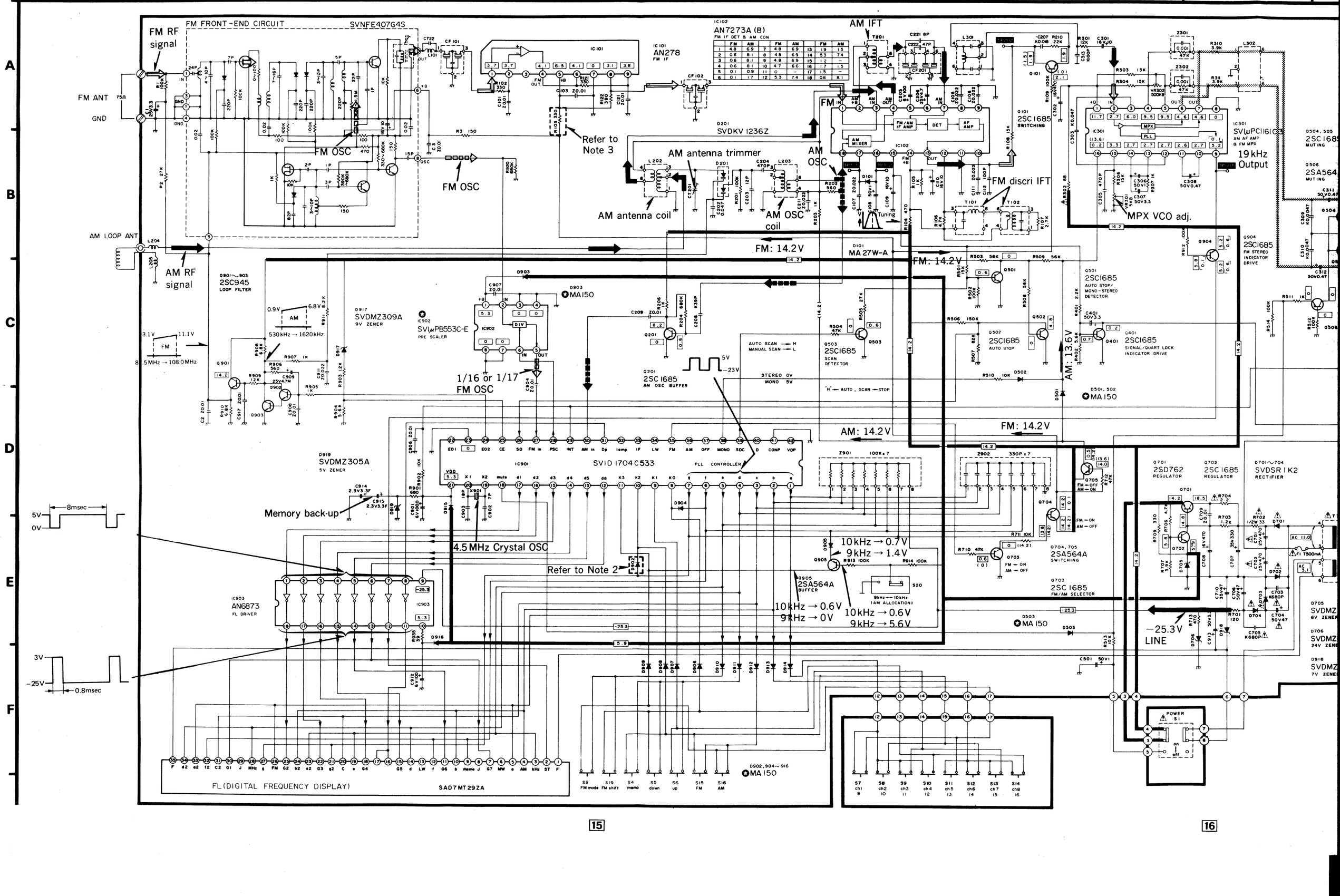
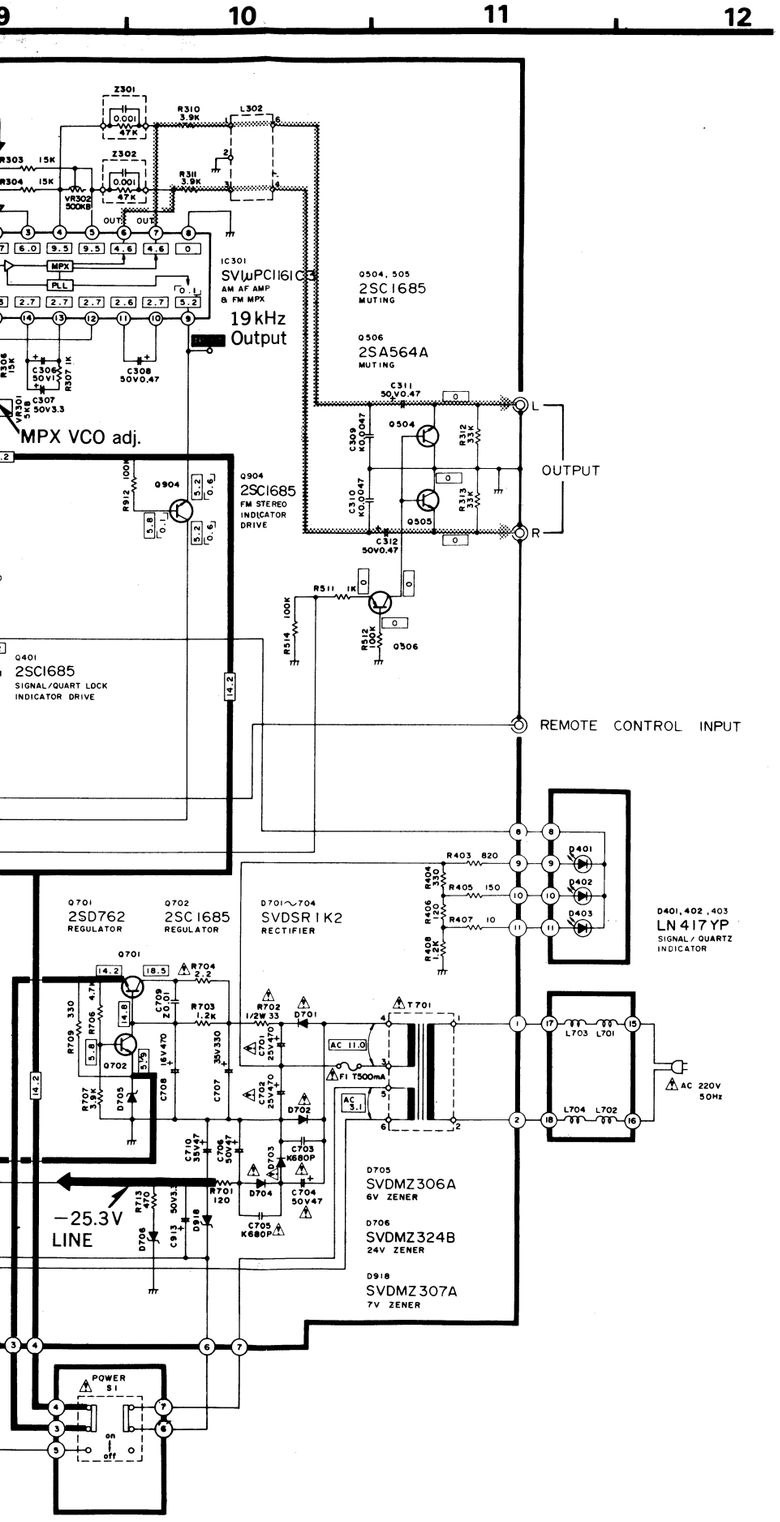


Fig. 11


FM FRONT-END CIRCUIT SVNFE407G4S
FM RF signal
FM ANT 75Ω
GND
AM LOOP ANT
AM RF signal
FM OSC
Refer to Note 3
AM antenna trimmer
AM antenna coil
AM OSC coil
AM OSC
AM IFT
FM discri IFT
MPX VCO adj.
19kHz Output
IC101 AN278 FM IF
IC102 AN7273A (B) FM IF DET & AM CON
D201 SVDKV1236Z
Q101 2SC1685 SWITCHING
IC301 SVμPC1161C3 AM AF AMP & FM MPX
Q501 2SC1685 AUTO STOP/MONO-STEREO DETECTOR
Q502 2SC1685 AUTO STOP
Q401 2SC1685 SIGNAL/QUART LOCK INDICATOR DRIVE
Q503 2SC1685 SCAN DETECTOR
Q201 2SC1685 AM OSC BUFFER
Q901~903 2SC945 LOOP FILTER
Q904 2SC1685 FM STEREO INDICATOR DRIVE
Q504, 505 2SC1685 MUTING
Q506 2SA564 MUTING
Q701 2SD762 REGULATOR
Q702 2SC1685 REGULATOR
Q703 2SC1685 FM/AM SELECTOR
Q704, 705 2SA564A SWITCHING
Q705 FM—OFF AM—ON
Q905 2SA564A BUFFER
D701~704 SVDSR1K2 RECTIFIER
D705 SVDMZ6V2 6V ZENER
D706 SVDMZ24V 24V ZENER
D918 SVDMZ7V 7V ZENER
D917 SVDMZ309A 9V ZENER
D919 SVDMZ305A 5V ZENER
D903 MA150
D501, 502 MA150
D503 MA150
D902, 904~916 MA150
IC902 SVμPB553C-E PRE SCALER
IC903 AN6873 FL DRIVER
IC901 SVID1704C533 PLL CONTROLLER
FM: 14.2V
AM: 14.2V
AM: 13.6V
-25.3V LINE
0.9V 6.8V AM 530kHz→1620kHz
3.1V 11.1V FM 87.5MHz→108.0MHz
1/16 or 1/17 FM OSC
4.5MHz Crystal OSC
Memory back-up
10kHz→0.7V 9kHz→1.4V
10kHz→0.6V 9kHz→0V
10kHz→0.6V 9kHz→5.6V
AUTO SCAN → H MANUAL SCAN → L
STEREO 0V MONO 5V
"H" → AUTO, SCAN → STOP
5V 0V 8msec
3V −25V 0.8msec
FL (DIGITAL FREQUENCY DISPLAY) SAD7MT29ZA
POWER S1
FM ON AM OFF
FM OFF AM ON
9kHz ↔ 10kHz (AM ALLOCATION)

15 16



■ SCHEMATIC DIAGRAM

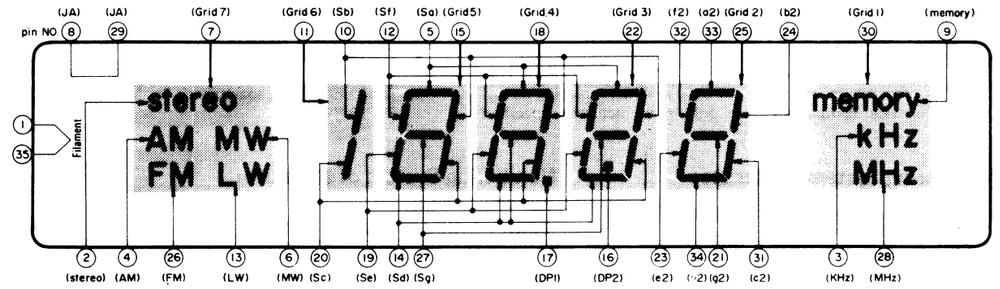
(This schematic diagram may be modified at any time with the development of new technology.)

* The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.
* This is the basic circit diagram of this unit. Note that part of the circuit is subject to change depending on the areas.

Note 1:

1. **S1** : Power source switch in "on" position.
2. **S3** : FM mode switch. (auto◄►mono)
3. **S4** : Memory set switch. (manual◄►auto memory)
4. **S5** : Tuning (down switch. (manual◄►auto)
   [down : tuning to lower frequency]
5. **S6** : Tuning (up) siwtch. (manual◄►auto)
   [up : tuning to higher frequency]
6. **S7 ~ S14** : Preset tuning switch.
   * With it lightly pushed (less than 0.4 sec.) and released, the 1 ~ 8 CH (front stations) are received.
   * With it continuously pushed (0.4 sec. or more) and released, the 9~16 CH (back stations) are received.
7. **S15** : FM selector switch.
8. **S16** : AM selector switch.
9. **S19** : FM frequency shift.
10. **S20** : AM allocation switch in "**10 kHz step**" position.
    9 kHz◄►10 kHz step
11. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    * Figures in ☐ stand for DC voltage in FM signal (no signal) reception mode.
    * Figures in ⌜ ⌟ stand for DC voltage in FM stereo signal reception mode.
    * Figures in ( )stand for DC voltage in AM signal reception mode.
12. ▬ Positive voltage lines ▒ AM signal lines
    ⇨ FM signal ▫▫▷ FM IF ▬▶ AM signal ■■▶ AM IF
13. Important safety notice.
    Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

• Fluorescent Display Tube (FL)



Note 2:

• Use of ceramic filters in pairs

The ceramic filters (CF101 and CF102) for FM-IF circuit are available in two ranks. For this machine, be sure to use the ceramics of the same rank in a pair.
At repairing and replacement, pay close attention to the diode (D902) for use as different diodes must be used depending on each rank of the ceramic filters.

RANK (Color)	D902	CENTER FREQUENCY
Black	O	10.65 MHz
Red	X	10.70 MHz

Note: O Mark Diode is used.
X Mark Diode is not used.

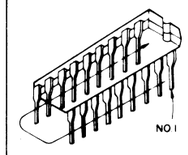
Note 3:

AN 7273 (IC102) is available in A rank (AN7273A) and B rank (AN7273B). Either rank can be used for this unit, but the suitable resistor must be used according to the rank as shown in the table below. So, keep this point in mind when repairing or replacing the unit.

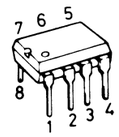
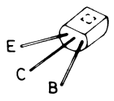
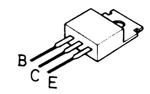
Ref. No. \ RANK	A	B
R103	1kΩ	560 Ω

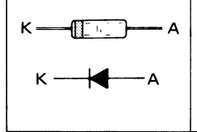
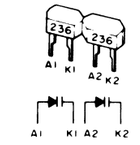
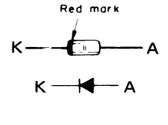
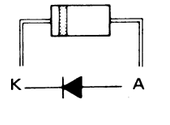
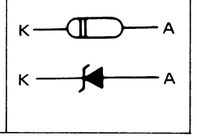
"A" painted in this position or red mark on main body stands for A rank, and similarly, "B" or green mark stands for B rank.

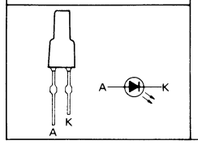
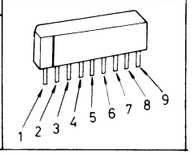
• Terminal guide of transistors, IC's and diodes



AN7470	16 pin
AN6873N AN7273	18 pin
SVID1704C533	42 pin

SVIμPB553C-E	2SC1685	2SD762
		

MA150	SVDKV1236Z	MA27W-A	SVDSR1K2	SVDMZ□□□□
				

LN03180P LN03480P	AN278
	

■ RESISTORS AND CAPACITORS

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice. Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. The unit of resistance is OHM (Ω). K = 1000Ω M = 1000kΩ
5. The unit of capacitance is MICROFARAD (μF) P = 10^{-6} μF

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon ERQ : Fuse Type Metal	25 : 1/4W 1 : 1W	J : ±5%

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA : Electrolytic ECCD : Ceramic ECKD : Ceramic ECQM: Polyester ECQP : Polypropylene EECW : Liquid electrolyte double layer capacitor	QJ : 6.3V 1A : 10V 1C : 16V 1E : 25V 1H : 50V 50 : 50V 25 : 25V	1H : 50V DC 2H : 500V DC 2R3 : 2.3V DC	C : ±0.25pF J : ±5% K : ±10% Z : +80%, −20%

Ref. No.		Part No.	Value
RESISTORS			
R1	Ⓢ	ERD25TJ104	100K
R2	Ⓢ	ERD25TJ273	27K
R3	Ⓢ	ERD25FJ151	150
R102,103	Ⓢ	ERD25FJ331	330
R104	Ⓢ	ERD25FJ471	470
R105	Ⓢ	ERD25FJ102	1K
R106	Ⓢ	ERD25FJ472	4.7K
R107	Ⓢ	ERD25FJ272	2.7K
R108	Ⓢ	ERD25TJ153	15K
R109	Ⓢ	ERD25TJ104	100K
R121	Ⓢ	ERD25FJ331	330
R122	Ⓢ	ERD25FJ391	390
R201	Ⓢ	ERD25TJ104	100K
R202	Ⓢ	ERD25FJ561	560
R203	Ⓢ	ERD25FJ102	1K
R204	Ⓢ	ERD25TJ684	680K
R206	Ⓢ	ERD25FJ102	1K
R210	Ⓢ	ERD25TJ223	22K
R301	Ⓢ	ERD25TJ123	12K
R302	⚠ Ⓢ	ERD25FJ680	68
R303,304	Ⓢ	ERD25TJ153	15K
R306	Ⓢ	ERD25TJ153	15K
R307	Ⓢ	ERD25FJ102	1K
R310,311	Ⓢ	ERD25FJ392	3.9K
R312,313	Ⓢ	ERD25TJ333	33K
R401	Ⓢ	ERD25FJ222	2.2K
R402	Ⓢ	ERD25FJ562	5.6K
R403	Ⓢ	ERD25FJ821	820
R404	Ⓢ	ERD25FJ331	330
R405	Ⓢ	ERD25FJ151	150
R406	Ⓢ	ERD25FJ121	120
R407	Ⓢ	ERD25FJ100	10
R408	Ⓢ	ERD25FJ122	1.2K
R501	Ⓢ	ERD25TJ153	15K
R502	Ⓢ	ERD25TJ104	100K
R503	Ⓢ	ERD25TJ563	56K
R504	Ⓢ	ERD25TJ473	47K

Ref. No.		Part No.	Value
RESISTORS			
R505	Ⓢ	ERD25TJ273	27K
R506	Ⓢ	ERD25TJ154	150K
R507	Ⓢ	ERD25TJ823	82K
R508,509	Ⓢ	ERD25TJ563	56K
R510	Ⓢ	ERD25FJ103	10K
R511	Ⓢ	ERD25FJ102	1K
R512	Ⓢ	ERD25TJ104	100K
R513	Ⓢ	ERD25FJ103	10K
R514	Ⓢ	ERD25TJ104	100K
R701	Ⓢ	ERD25FJ121	120
R702	⚠	ERQ12HJ330	33
R703	Ⓢ	ERD25FJ122	1.2K
R704	⚠ Ⓢ	ERD25FJ2R2	2.2
R706	Ⓢ	ERD25FJ472	4.7K
R707	Ⓢ	ERD25FJ392	3.9K
R709	Ⓢ	ERD25FJ331	330
R710	Ⓢ	ERD25TJ473	47K
R711	Ⓢ	ERD25FJ103	10K
R712	Ⓢ	ERD25TJ473	47K
R713	Ⓢ	ERD25FJ471	470
R901	Ⓢ	ERD25FJ681	680
R902	Ⓢ	ERD25FJ103	10K
R903	Ⓢ	ERD25FJ122	1.2K
R904	Ⓢ	ERD25FJ562	5.6K
R905	Ⓢ	ERD25FJ102	1K
R906	Ⓢ	ERD25FJ561	560
R907	Ⓢ	ERD25FJ102	1K
R908	Ⓢ	ERD25FJ682	6.8K
R909	Ⓢ	ERD25TJ123	12K
R910	Ⓢ	ERD25FJ682	6.8K
R911	Ⓢ	ERD25FJ822	8.2K
R912	Ⓢ	ERD25TJ104	100K
R913,914	Ⓢ	ERD25TJ104	100K
R920	Ⓢ	ERD25TJ684	680K
R935	Ⓢ	ERD25FJ390	39

Ref. No.		Part No.	Value
CAPACITORS			
C1	Ⓢ	ECEA50Z3R3	3.3
C2,3	Ⓢ	ECKD1H103ZF	0.01
C4	Ⓢ	ECKD1H103ZF	0.01
C101	Ⓢ	ECKD1H103ZF	0.01
C103	Ⓢ	ECKD1H103ZF	0.01
C105,106	Ⓢ	ECKD1H223ZF	0.022
C107	Ⓢ	ECKD1H223ZF	0.022
C108	Ⓢ	ECEA50Z1	1
C109,110	Ⓢ	ECEA1HS100	10
C111	Ⓢ	ECKD1H223ZF	0.022
C112	Ⓢ	ECCD1H101K	100P
C202		ECQM1H473KV	0.047
C203	Ⓢ	ECCD1H120KC	12P
C204		ECQP1471JZ	470P
C205	Ⓢ	ECEA1AS101	100
C206	Ⓢ	ECEA25Z4R7	4.7
C207		ECQM1H183KV	0.018
C208	Ⓢ	ECCD1H390K	39P
C209	Ⓢ	ECKD1H103ZF	0.01
C211	Ⓢ	ECKD1H223ZF	0.022
C221	Ⓢ	ECCD1H080CC	8P
C222	Ⓢ	ECCD1H470K	47P
C301	Ⓢ	ECEA1HS100	10
C302	Ⓢ	ECEA1HS471	470
C303		ECQM1H473KV	0.047
C305		ECQP1471JZ	470P
C306	Ⓢ	ECEA50Z1	1
C307	Ⓢ	ECEA50Z3R3	3.3
C308	Ⓢ	ECEA50ZR47	0.47

Ref. No.		Part No.	Value
CAPACITORS			
C309,310	Ⓢ	ECQM1H472KV	0.0047
C311,312	Ⓢ	ECEA50ZR47	0.47
C313	Ⓢ	ECCD1H101K	100P
C401	Ⓢ	ECEA50Z3R3	3.3
C501	Ⓢ	ECEA50Z1	1
C701,702	Ⓢ	ECEA1ES471	470
C703	⚠ Ⓢ	ECKD2H681KB	680P
C704	Ⓢ	ECEA1HS470	47
C705	⚠ Ⓢ	ECKD1H681KB	680P
C706	Ⓢ	ECEA1HS470	47
C707	Ⓢ	ECEA1VS331	330
C708	Ⓢ	ECEA1CS471	470
C709	Ⓢ	ECKD1H103ZF	0.01
C710	Ⓢ	ECEA1HS470	47
C722	Ⓢ	ECCD1H390K	39P
C901	Ⓢ	ECEA0JS102	1000
C902	Ⓢ	ECCD1H070CC	7P
C903	Ⓢ	ECCD1H180KC	18P
C904	Ⓢ	ECKD1H103ZF	0.01
C906,907	Ⓢ	ECKD1H103ZF	0.01
C908	Ⓢ	ECKD1H103ZF	0.01
C909	Ⓢ	ECEA25M4R7R	4.7
C911	Ⓢ	ECKD1H223ZF	0.022
C912	Ⓢ	ECEA1AS101	100
C913	Ⓢ	ECEA50Z3R3	3.3
C914,915		EECW2R3A3R3	3.3F
C917	Ⓢ	ECKD1H103ZF	0.01

■ REPLACEMENT PARTS LIST

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Ⓚ - marked parts are used for black only, while ○ - marked parts are for silver type only.
4. Part other then Ⓚ - and ○ - marked are use for both black and silver type.
5. The "Ⓢ" mark is service standard parts and may differ from production parts.
6. The parenthesized numbers in the column of description stand for the quantity per set.

Black type model No. ST-Z55 (K)

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC101	AN278	FM IF Amp.
IC102	AN7273B	FM IF Det.& AN Convertor
IC301	SVIUPC1161C3	MPX
IC901	SVID1704C533	PLL-Controller
IC902	SVIUPB553AC	Pre-Scaler
IC903	AN6873N	FL Driver
TRANSISTORS		
Q101,201,401, 501～505, 702,703,904,	2SC1685-Q	Switching,AM OSC Buffer Regulator
Q506,704, 705,905 Ⓢ	2SA564AR	Muting,Switching
Q701	2SD762-O	Regulator
Q901～903 Ⓢ	2SC945-Q	Loop Filter
DIODES		
D101	MA27W-A	
D201	SVDKV1236Z	AM Variable Capacitance
D401,402,403	LN417YP	L.E.D,Signal, Quartz Lock
D501～503, 902～916 Ⓢ	MA162A	Switching
D701～704 ⚠ Ⓢ	SVDSR1K2	Rectifier
D705	SVDMZ306A	6V,Zener
D706	SVDMZ324B	24V,Zener
D917	SVDMZ309A	9V,Zener
D918	SVDMZ307A	7V,Zener
D919	SVDMZ305A	5V,Zener
COILS and TRANSFORMERS		
L101,204,205	SLQZ12G1-D	Choke
L202	SLA2C5-P	MW Antenna
L203	SL02C29R-P	MW OSC
L301	SLM1C69-P	LPF
L302	SLMA1Z3-Z	LPF
L701,702	SLQZ10G1-D	Choke(RF)
L703,704	SLQX400-D	Choke (Power Source)
T101	SLI4C535-Z	FM IFT
T102	SLI4C537-Z	FM IFT
T201	SLI2C143-M	AM IFT
T701 ⚠	SLT5K141	Power Source
CERAMIC FILTERS		
CF101 {	SVFE107MZ2-A	FM,10.7MHz (Red)
{	SVFE107MZ2-D	FM,10.65MHz (Black)
CF102 {	SVFE107MX2-A	FM,10.7MHz (Red)
{	SVFE107MX2-D	FM,10.65MHz (Black)
	(Use pair ranks as same as CF101 and CF102)	
CF201	SVFSFZ450F7L	AM,450kHz
VARIABLE RESISTOR		
VR301	EVN75AA00B53	MPX VCO Adj, 5KΩ(B)
VR302 Ⓢ	EVTS3MA00B55	Separation Adj.,500kΩ(B)
VARIABLE CAPACITOR		
CT201	SVCTZ03T110F	MW Antenna Trimmer

Ref. No.	Part No.	Description
VARIABLE COMBINATIONS		
Z301,302	EXRP102K473T	0.001μF,47KΩ
Z901	EXBP87104K	100KΩ(×7)
Z902	EXFP7331MW	330pF(×7)
CRYSTAL		
X901	SVQ49U452-T	4.5MHz Counter OSC
FLOURESCENT DISPLAY TUBE		
FL	SAD7MT29ZA	
FM FRONT END		
	SNVFE407G4S	FM RF
FUSE		
F1 ⚠	XBA2C05TRO	250V,T500mA
SWITCHES		
S1 ⚠	SSH1049	Power Source
S3～6,15,16,19	SSG11	FM Mode, Memory,Tuning, FM Mode, AM Mode,FM 25kHz Shift
S7～14	SSG13	Preset Tuning
S20	SSS67	AM Allocation

Ref. No.		Part No.	Description	
CABINET AND CHASSIS PARTS				
1	○	SGWTZ55-SE	Front Panel,(Silver)	(1)
1	Ⓚ	SGWTZ55-KE	Front Panel,(Black)	(1)
2		SGUTZ55-SE	Transparent Panel	(1)
3		SBC585	Button,Band	(1)
4		SBC587	Button,Preset (CH1-9)	(1)
5		SBC587-1	Button,Preset (CH2-10)	(1)
6		SBC587-2	Button,Preset (CH3-11)	(1)
7		SBC587-3	Button,Preset (CH4-12)	(1)
8		SBC587-4	Button,Preset (CH5-13)	(1)
9		SBC587-5	Button,Preset (CH6-14)	(1)
10		SBC587-6	Button,Preset (CH7-15)	(1)
11		SBC587-7	Button,Preset (CH8-16)	(1)
12		SBC451-4	Button	(1)
13		SDU89-1	Filter,FL	(1)
14		SBC337-1	Button,Power Switch	(1)
15	○	SGX7527	Front Sub Panel (Silver)	(1)
15	Ⓚ	SGX7527-1	Front Sub Panel (Black)	(1)
16		SUW1893-1	Bracket,Power Switch	(1)
17		SUW1891-1	Bracket,FL	(1)
18		SKL245-2	Rubber	(2)
19	○	SKCTZ55L-SE	Cabinet (Silver)	(1)
19	Ⓚ	SKCTZ55L-KE	Cabinet (Black)	(1)
20		SJT347	Holder,Fuse	(2)
21		SGP3110-1	Rear Sub Panel	(1)
22		SHR5181	Spacer	(1)
23		SHR127	Bushing,AC Cord	(1)

Ref. No.		Part No.	Description	
CABINET AND CHASSIS PARTS				
24	⚠	SJA138-3	AC Cord	(1)
25		SGPTZ55-SG	Rear Panel	(1)
25-1		(SKL245-2	Foot	(4)
26		SHR5169-2	Spacer,Switch	(1)
27		SJF8605N	Terminal Board	(1)
28		SUW1959	Bracket	(1)
29		SMC1053	Shield Cover	(1)
30		RHR110	Bushing	(1)
31		SMC1051	Bracket	(1)
32		SUS291	Spring,Terminal Board	(1)
33		SJE83	Plug,Ass'y	(1)
SCREWS				
N1	Ⓢ	XTB3+8BFZ	Tapping,+3×8	(12)
N2	Ⓢ	XTN3+8BFN	Tapping,+3×8	(4)
N3	Ⓢ	XSN3+6S	+3×6	(2)
N4	Ⓢ	XTB3+8BFN	Tapping,+3×8	(1)
N5	Ⓢ	XTB3+16BFN	Tapping,+3×16	(1)
N6		XTBS3+8FFYR1	Tapping with Detent, +3×8	(4)
N7	○	SNE2095-2	Tapping(Silver)	(4)
N7	Ⓚ	SNE2095-3	Tapping(Black)	(4)
N8	Ⓢ	XTB3+10BFZ	Tapping,+3×10	(2)
N9	Ⓢ	XTB3+6BFZ	Tapping,+3×6	(3)
N10		XTBS3+8BFZ1	Tapping with Detent, +3×8	(1)
WASHERS				
N11	Ⓢ	XWA3B	Spring,φ3	(2)
N12	Ⓢ	XWG3	Plain,φ3	(4)
N13		SHW32E200		(1)
ACCESSORIES				
A1		SJP2249	Cord	(1)
A2		SSA901	Cord,FM Indoor Antenna	(1)
A3		SSA611-1	Loop Antenna	(1)
A4		XTN3+10AFZ	Screw	(2)
A5		SMA231	Holder	(1)
A6		SMA233-1	Holder	(1)
A7		SQF11767	Instruction Book	(1)
PACKING PARTS				
P1	○	SPP697	Polyethylene Bag	(1)
P1	Ⓚ	SPP659	Polyethylene Bag	(1)
P2		SPS3493	Pad,Front Side	(1)
P3		SPS3495	Pad,Rear Side	(1)
P4		SPG4469	Carton Box	(1)
P5	Ⓚ	SGK1413	Label(Black only)	(2)

■ EXPLODE

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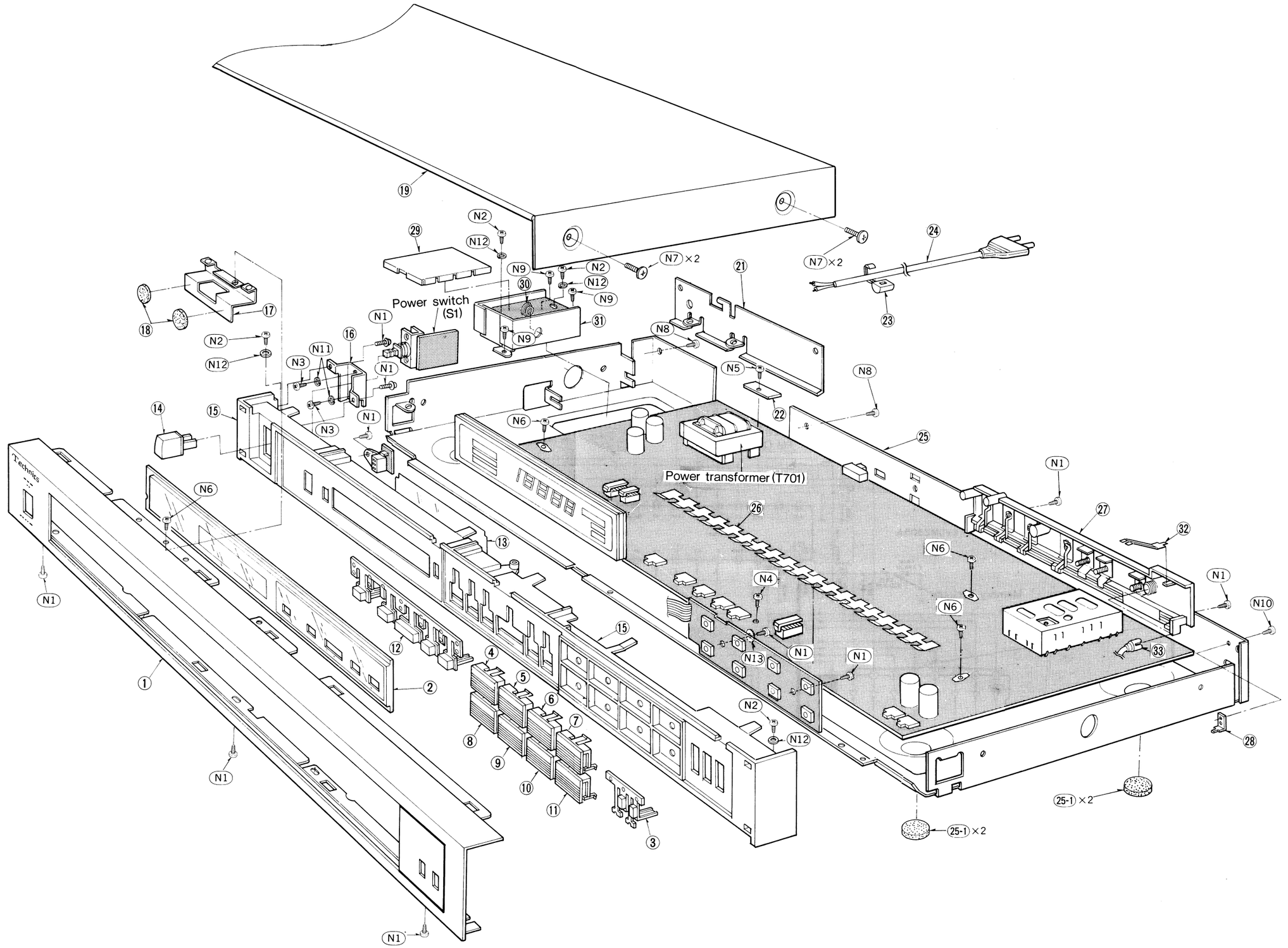
nd may differ

of description

■ EXPLODED VIEW



Description	
RTS	
C Cord	(1)
ear Panel	(1)
oot	(4)
pacer,Switch	(1)
erminal Board	(1)
racket	(1)
hield Cover	(1)
ushing	(1)
racket	(1)
pring,Terminal Board	(1)
ug,Ass'y	(1)
apping,⊕3×8	(12)
apping,⊕3×8	(4)
3×6	(2)
apping,⊕3×8	(1)
apping,⊕3×16	(1)
apping with Detent,	
3×8	(4)
apping(Silver)	(4)
apping(Black)	(4)
apping,⊕3×10	(2)
apping,⊕3×6	(3)
apping with Detent,	
3×8	(1)
pring, ϕ3	(2)
ain, ϕ3	(4)
	(1)
ord	(1)
ord,FM Indoor	
tenna	(1)
op Antenna	(1)
rew	(2)
lder	(1)
lder	(1)
struction Book	(1)
lyethylene Bag	(1)
lyethylene Bag	(1)
d,Front Side	(1)
d,Rear Side	(1)
rton Box	(1)
bel(Black only)	(2)

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